



# DEFENSE INFRASTRUCTURE

## Army Should Assess Progress in Standardizing Designs for Facility Construction

Accessible Version

# GAO Highlights

Highlights of [GAO-20-303](#), a report to congressional requesters

## Why GAO Did This Study

In 2006, the U.S. Army Corps of Engineers began its Centers of Standardization program to develop design standards for facility types that the Army constructs on a regular basis. The Centers support broader Army efforts under the AFSP to standardize facility types with objectives such as improving design quality, reducing design and construction costs and time, and reducing change orders.

Senate Report 115-262 accompanying the John S. McCain National Defense Authorization Act for Fiscal Year 2019 included a provision for GAO to evaluate the Centers' effectiveness. This report assesses, among other things, the extent to which (1) the Centers have identified activities that support their objectives, and (2) the Army tracks the Centers' progress toward their objectives. GAO reviewed and analyzed applicable regulations and program and project documentation; compared Center activities to program objectives; and interviewed cognizant agency officials to gain an understanding of the Centers' operations and potential financial liabilities.

## What GAO Recommends

GAO is recommending that the Army establish performance measures to assess the Centers' progress to (1) ensure the consistent use of standard designs and (2) reduce construction costs and time and reduce the occurrence of change orders. The Army concurred with our recommendations.

View [GAO-20-303](#). For more information, contact Diana Maurer at [maurerd@gao.gov](mailto:maurerd@gao.gov) or (202) 512-9627

April 2020

## DEFENSE INFRASTRUCTURE

### Army Should Assess Progress in Standardizing Designs for Facility Construction

## What GAO Found

The nine Centers of Standardization (Centers) within the U.S. Army Corps of Engineers undertake a number of activities designed to support each of their program objectives. Their charter includes three objectives: (1) developing and refining Centers' policies and processes; (2) assuring consistent application of the Centers' standards; and (3) monitoring execution to meet the overarching objectives and priorities of the Army Facilities Standardization Program (AFSP) and standardization process. We found that the Centers' various activities—such as conducting value engineering and life-cycle cost studies to identify possible cost savings and analyze long-term costs of new facilities—are consistent with key principles and concepts in Office of Management and Budget guidance for a disciplined capital planning process. Additionally, the post-occupancy evaluations led by the Centers are designed to evaluate whether the Army functional requirements have been met, Army standard design has been implemented, and there are any areas where the design could be improved. These evaluations support all three of the Centers' objectives by evaluating whether a design needs improvement, a facility was constructed in accordance with the approved project design, and customer needs were met.

#### Centers of Standardization Activities Performed during Army Military Construction Projects

Pre-Design Phase	Design Phase	Construction Phase	Post-Construction Phase
<ul style="list-style-type: none"><li>• Develop design standards</li><li>• Conduct Value Engineering (VE) Studies</li><li>• Conduct Life Cycle Cost Analyses (LCCA)</li></ul>	<ul style="list-style-type: none"><li>• Participate in planning meetings</li><li>• Review project proposal</li><li>• Perform design reviews</li><li>• Conduct additional VE studies</li><li>• Conduct additional LCCA</li></ul>	<ul style="list-style-type: none"><li>• Participate in the evaluation of change orders</li></ul>	<ul style="list-style-type: none"><li>• Participate in post-occupancy evaluations</li><li>• Update standard designs</li></ul>

Source: GAO analysis of U.S. Army Corps of Engineers Centers of Standardization information. | [GAO-20-303](#)

The Army has limited performance measures to track the Centers' progress in achieving program objectives. Semi-annual meetings of the Army's Centers of Standardization Management Board (Board) enable the Army to track the Centers' progress toward their goal of developing and updating Center policies and processes (first objective of the Centers). However, GAO found that the Army lacks performance measures to assess the Centers' progress in ensuring the consistent application of Army standard designs (second objective of the Centers) and in monitoring how well the Centers meet the objectives and priorities of the AFSP and standardization process (third objective of the Centers). Specifically, the Board does not maintain, consolidate, or analyze information about how frequently the Centers participate in construction projects, or how this activity affects the program and supports AFSP objectives, such as reducing project costs, times, and change orders. Taking steps to develop and implement appropriate performance measures would enhance the Army's efforts to ensure that the Centers are meeting their program objectives.

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### Abbreviations

Army	Department of Army
ACSIM	Assistant Chief of Staff for Installation Management
AFSP	Army Facilities Standardization Program
Centers	Centers of Standardization
Change Order	Contract changes
Committee	Army Facilities Standardization Committee
DOD	Department of Defense
Facilities Criteria	Unified Facilities Criteria
IMCOM	Installation Management Command
MILCON	Army Military Construction
OMB	Office of Management and Budget
OUSD(R&E)	Office of the Under Secretary of Defense for Research and Engineering
POE	Post-Occupancy Evaluation
The Board	Centers of Standardization Management Board
UFGS	Unified Facilities Guide Specifications
USACE	U.S. Army Corps of Engineers

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April 22, 2020

### Congressional Committees

In 2006 the U.S. Army Corps of Engineers (USACE) began its Centers of Standardization (Centers) program. Under this program, USACE established nine Centers to develop design standards for types of facilities that the Department of the Army (Army) constructs on a regular basis, such as barracks, battalion headquarters, dining facilities, and fitness centers. The objectives for Army facilities' standardization and use of the Centers' standard designs include improving the design quality of Army facilities, reducing the design and construction costs and time, and reducing the contract changes during construction. We have previously reported that federal construction projects typically involve some degree of change as the projects progress. Contract changes (change orders) are made through modifications to a contract and can occur for a variety of reasons, including design errors and changes in user requirements.<sup>1</sup> For instance, a contractor could file a claim against the government if the contractor felt there was a flaw in the Army's standard design or that using the standard design resulted in unanticipated costs during the design or construction phase.

In March 2018 we reported that Department of Defense (DOD) construction projects consistently faced cost overruns and schedule delays.<sup>2</sup> Additionally, we reported that guidance for construction projects did not fully incorporate the necessary steps for developing reliable cost estimates. We recommended that DOD fully incorporate all 12 steps needed for developing high-quality reliable cost estimates. As of August 2019, DOD officials told us that the department was planning to update its cost-estimating guidance to include all 12 steps.

In addition, in July 2019 we reported that USACE does not regularly monitor how long it takes to finalize construction contract changes, thus limiting management's ability to identify and respond to problems. We recommended that the Secretary of the Army direct the Chief of Engineers and Commanding General of the U.S. Army Corps of

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<sup>1</sup>See GAO, *Federal Construction: Army Corps of Engineers and GSA Need to Improve Data on Contract Changes*, [GAO-19-500](#) (Washington, DC: July 2, 2019).

<sup>2</sup>GAO, *Defense Infrastructure: Action Needed to Increase the Reliability of Construction Cost Estimates*, [GAO-18-101](#) (Washington, D.C.: Mar. 27, 2018).

Engineers to develop a strategy to expand on existing data and systems to routinely collect information on and monitor the time frames for finalizing construction contract changes at the headquarters level. DOD agreed with this recommendation, and officials told us that DOD has developed a corrective action plan to address the recommendation. They estimate that this effort will be completed in August 2020.<sup>3</sup>

Senate Report 115-262, accompanying a bill for the John S. McCain National Defense Authorization Act for Fiscal Year 2019, included a provision for us to evaluate the effectiveness of the Centers, including whether they are achieving their objectives.<sup>4</sup> This report assesses the extent to which (1) the Centers have identified activities that support their key objectives; (2) the Army tracks the Centers' progress in meeting their key objectives; and (3) increased liability may be introduced to the Centers during construction when standard designs are used.

For objective one, we assessed the Centers' roles and responsibilities—as stipulated in Army and USACE regulations—to identify activities that the Centers undertake on construction projects. We identified eight Army projects that were authorized in fiscal years 2014 and 2015 for our analysis.<sup>5</sup> We selected projects from those years because military construction projects typically take multiple years to complete. Therefore, selecting projects from this time frame increased the likelihood that the contractor had completed construction of the projects and that the Centers had conducted post-occupancy evaluations, which are used to assess users' satisfaction with completed projects.<sup>6</sup> We then compared these activities to the objectives expressed in the Centers' 2006 charter to

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<sup>3</sup>[GAO-19-500](#).

<sup>4</sup>S. Rep. No. 115-262, at 402-03 (2018).

<sup>5</sup>The Army documentation provided for these projects showed that five of them—which involved three of the nine Centers—used standard designs. Of the remaining three projects: one project was canceled, and the other two did not use standard designs. See appendix I for a list of the projects we reviewed.

<sup>6</sup>DOD guidance uses the term “post-occupancy review” and Office of Management and Budget (OMB) guidance uses the term “post-occupancy evaluation” to refer to the process of reviewing completed projects. For the purposes of our report, we will use post occupancy evaluation (POE). See Army Engineer Regulation 1110-3-113, *Department of the Army Facilities Standardization Program*, Appx. G (Apr. 21, 2016); OMB Circular No. A-11, *Preparation, Submission, and Execution of the Budget*, Supplement, *Capital Programming Guide*, Version 3.0 (December 2019).

determine whether the activities supported the objectives.<sup>7</sup> We reviewed supporting documentation for eight Army projects that the service identified as being built using standard designs to determine whether evidence existed to demonstrate that the Centers had engaged in these activities. While our observations on these projects are not generalizable to all Army projects, they illustrate the kinds of activities the Centers engage in on Army projects that use standard designs. We further evaluated whether the Centers' activities are consistent with key principles and concepts in Office of Management and Budget (OMB) guidance to agencies for a disciplined capital programming process (for example, federal buildings).<sup>8</sup> We also interviewed cognizant officials concerning the Centers' objectives and activities they engage in to support those objectives.

For objective two, we reviewed information on processes related to the Centers' project documentation and performance metrics. We also reviewed DOD annual performance reports to identify any goals and performance measures that are related to the objectives of the Centers. We assessed whether the project documentation, the Centers' performance measures, and any performance measures in DOD's annual performance reports would assist the Centers in assessing progress toward their three program objectives to (1) develop and refine Centers of Standardization policies and processes; (2) assure consistent application of standards of the Centers program; and (3) monitor the Centers' execution to meet the overarching objectives and priorities of the Army Facilities Standardization Program (AFSP) and standardization process. Finally, we interviewed Centers headquarters and Army officials, including members of the Centers of Standardization Management Board, concerning any performance measures currently being utilized.

For objective three, we reviewed DOD and Army guidance and regulations that address legal responsibilities related to military construction to identify the extent to which the Centers' role in developing standard designs used in construction potentially exposes the Centers to liability related to problems that arise during construction.<sup>9</sup> We reviewed documents that relate to the Centers' standard contracting practices and

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<sup>7</sup>Army Regulation 420-1, *Army Facilities Management* (Feb. 12, 2008) (incorporating administrative revision, dated March 6, 2012); Army Engineer Regulation 1110-3-113.

<sup>8</sup>OMB, *Capital Programming Guide* (December 2019).

<sup>9</sup>E.g., Federal Acquisition Regulation (FAR), 48 C.F.R. § 52.236-23 (2020). See also FAR, 48 C.F.R. § 52.236-25 (2020) ("Requirements for Registration of Designers").

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interviewed USACE legal counsel concerning any previous or potential liability related to standard design.

We conducted this performance audit from January 2019 to April 2020 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

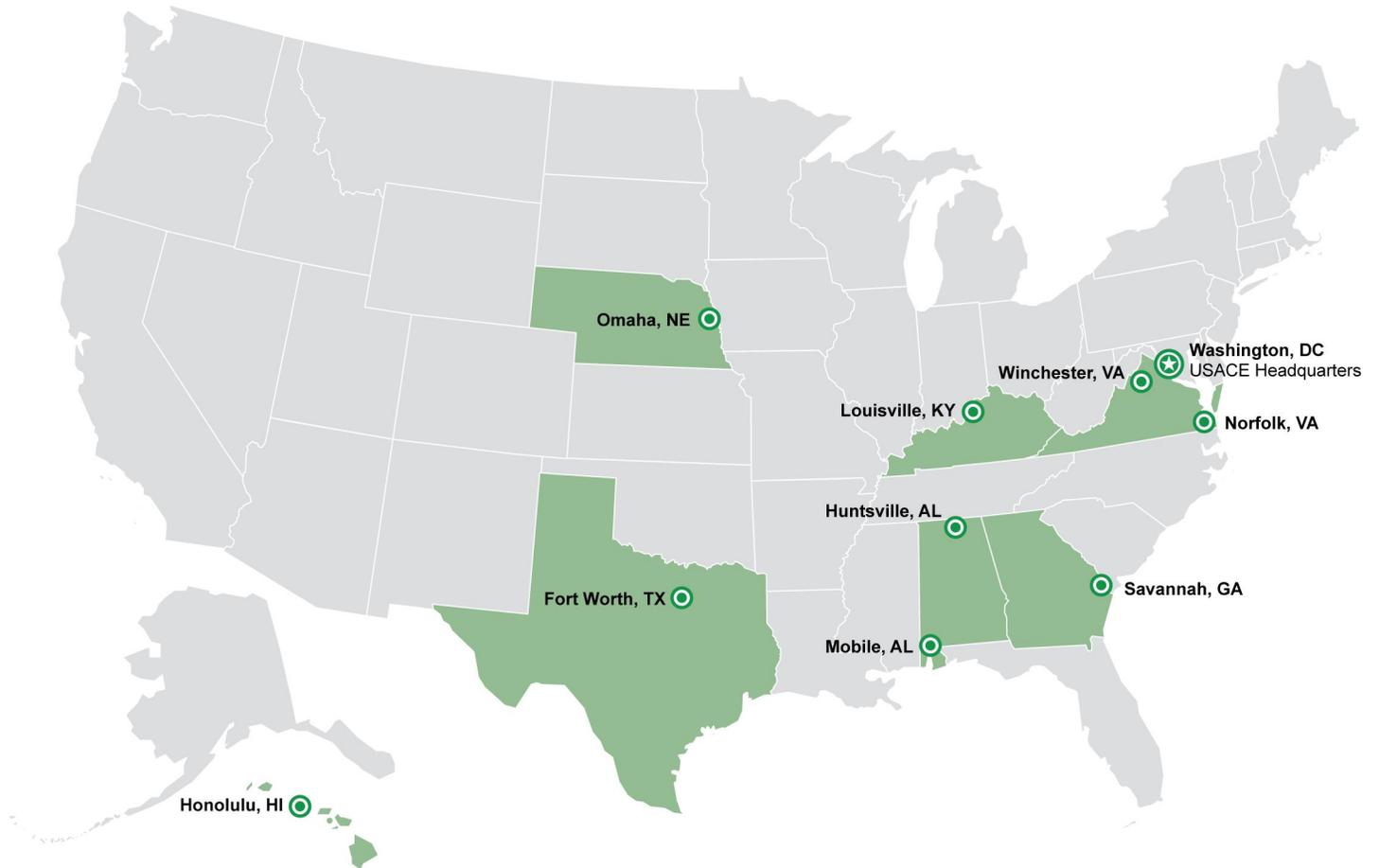
The overall objective of the Army Facilities Standardization Program is to achieve savings and benefits in the programing, design, and construction of Army facilities of excellence.<sup>10</sup> To meet AFSP's objectives in a timely, efficient, and cost-effective manner, the Army established the nine Centers in 2006 to support the AFSP, as shown in figure 1.<sup>11</sup>

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<sup>10</sup>Army Engineer Regulation 1110-3-113. The objectives for Army facilities standardization include, but are not limited to: (1) increased credibility with the Congress through more consistent construction program development; (2) increased consistency in facility types with equal treatment among Army Commands, installations, and users; (3) improved master planning and site development activities, improved design quality, and the promotion of design excellence; (4) simplified programming activities; (5) simplified design and construction project management, reduced design costs and times, reduced construction costs and time, and reduced change orders during construction; and (6) increased customer satisfaction through improved responsiveness to user's functional and operational requirements.

<sup>11</sup>USACE is comprised of eight divisions (geographical areas of responsibility), 43 district offices, and nine other organizations serving specific functional needs. In five instances, the division headquarters and district office are collocated.

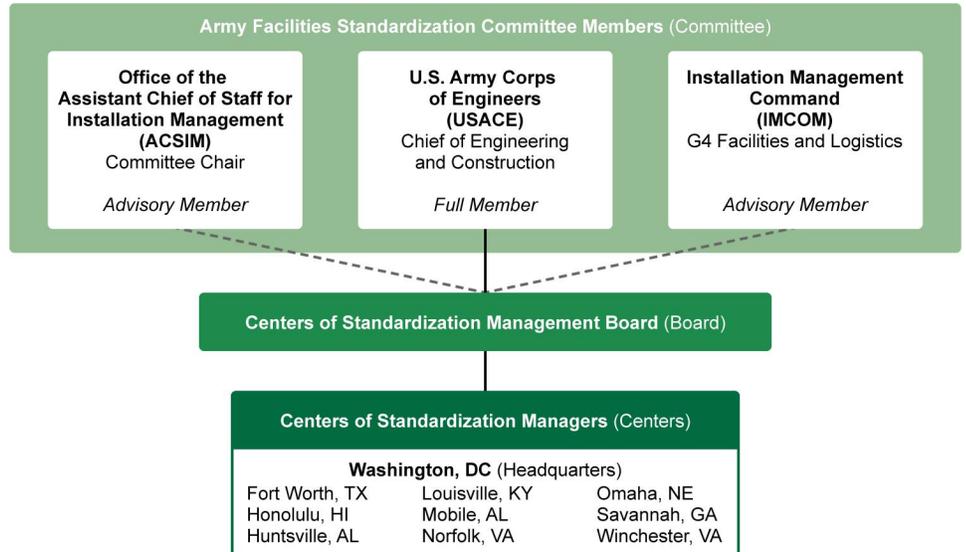
Figure 1. U.S. Army Corps of Engineers Centers of Standardization Geographic Locations



Source: GAO analysis of U.S. Army Corps of Engineers Centers of Standardization information. | GAO-20-303

The AFSP operates under the direction of the Army Facilities Standardization Committee (Committee). As shown in figure 2 below, the Committee is chaired by the Assistant Chief of Staff for Installation Management (ACSIM) and composed of members from USACE and the U.S. Army Installation Management Command (IMCOM). Each of these offices has representatives who are either full-fledged or advisory members of the Centers of Standardization Management Board (the Board). The Board members directly oversee the activities of the Centers and are responsible for developing performance measures and reporting them to the Committee.

**Figure 2. Organizational Chart of Army Facilities Standardization Committee, Centers of Standardization Management Board, and the Centers of Standardization**



Source: GAO analysis of Department of the Army and U.S. Army Corps of Engineers data. | GAO-20-303

The Centers have primary responsibility for developing and managing Army standard design packages for designated facility types. The Centers, among other things, ensure that these standard designs and construction of projects comply with two other sets of facility guidelines: DOD’s Unified Facilities Criteria (Facilities Criteria) and general Army standards.

- As we previously reported, the Facilities Criteria are overarching, DOD-wide technical manuals and standards used for planning, design, construction, restoration, and maintenance of DOD facility projects. These criteria must be used to the greatest extent possible by all DOD components.<sup>12</sup> They are developed through the joint efforts of the U.S. Army Corps of Engineers, the Naval Facilities Engineering Command, and the Air Force Civil Engineer Center, and they are approved by the Engineer Senior Executive Panel of the Unified Facilities Criteria Program.<sup>13</sup>

<sup>12</sup>GAO-18-101.

<sup>13</sup>For more information on DOD’s Unified Facilities Criteria, see <https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc> as maintained by the National Institute of Building Sciences and the Department of Defense.

- According to Army Regulation 420-1, Army standards are the immutable, unchanging, required facility elements and criteria that define the fundamental purpose and function of a facility’s design and construction.<sup>14</sup> These Army standards are authorized by the Committee. Army standard designs define the facility key components, features, and characteristics that must be included in the design and construction or major renovation of all facilities of the same type regardless of location, available funding, command preferences, or installation mission. Essentially, Army standard designs may consist of architectural and engineering drawings as well as written design specifications that a construction team can easily adapt or modify for site-specific requirements.

Figure 3 below compares Army standard designs with Facilities Criteria and general Army standards.

**Figure 3. Figurative Comparison between Army Standard Designs and Two Other Sets of Facility Guidelines, the Department of Defense’s Unified Facilities Criteria and General Army Standards**

<b>Unified Facilities Criteria</b>	<b>Unified Facilities Criteria</b> <i>Department of Defense (DOD)</i> <ul style="list-style-type: none"> <li>• Standards used for planning, design, and construction of DOD facilities</li> <li>• Apply to all Department of Defense agencies</li> </ul>
<b>Army Standards</b>	<b>Army Standards</b> <i>Assistant Chief of Staff for Installation Management (ACSIM)</i> <ul style="list-style-type: none"> <li>• Define the fundamental purpose and function of a facility’s design and construction</li> <li>• Conform to Unified Facilities Criteria</li> <li>• Currently 33 approved Army standards</li> </ul>
<b>Army Standard Designs</b>	<b>Army Standard Designs</b> <i>U.S. Army Corps of Engineers Centers of Standardization</i> <ul style="list-style-type: none"> <li>• Provide specific and detailed requirements for standard facility types</li> <li>• Conform to both DOD Unified Facilities Criteria and any associated Army standard</li> <li>• Currently 70 approved standard designs</li> </ul>

Source: GAO analysis of U.S. Army Corps of Engineers Centers of Standardization data. | GAO-20-303

In addition to developing and managing Army standard design packages, the Centers’ staff function principally as engineering and architectural consultants within larger project teams as they monitor and oversee the appropriate use of Army standard designs (as well as any incorporated Army standards or Facilities Criteria). According to Centers officials, 12 full-time and 21 part-time staff are currently dedicated to the Centers. Staff are located in USACE headquarters in Washington, D.C., as well as in eight USACE districts and one Engineering and Support Center. Each

<sup>14</sup> Army Regulation 420-1, *Army Facilities Management*, Appx. G (Feb. 12, 2008) (incorporating administrative revision, dated March 6, 2019).

Center specializes in and is responsible for specific facility types and their designs. While the Centers support the Army's overall efforts for standardization, not every Army facility is built according to a standard design.<sup>15</sup> Appropriate Centers staff are required to review every proposed Army construction project at its outset and, if an installation has requested a waiver from an existing Army standard or standard design, all voting members of the Committee may authorize waivers in accordance with certain procedures. According to Centers officials, Army standard designs have been developed for about 70 regularly constructed facility types out of the Army's nearly 900 facility types. For example, the Army has standard designs for fire stations, chapels, dining facilities, and weapons storage. (See appendix II for a listing of the 70 facility types that currently have standard designs or for which standard designs are under development.)

According to Centers officials, the Centers' 70 facility types account for approximately 60 percent of Army Military Construction (MILCON) projects and represent an estimated 55 percent to 70 percent of the overall Army MILCON budget for any given year.<sup>16</sup> (See appendix III for information on overall DOD standardization program, including the Navy and Air Force standard design programs.) In fiscal year 2019, the Centers reported a combined annual budget of about \$6.2 million for their operations and personnel.

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## The Centers Have Engaged in Activities That Support Key Objectives and Are Consistent with Key Principles and Concepts in OMB Guidance

The Centers identified and engaged in a number of activities designed to support the key objectives found in their charter and these activities are consistent with key principles and concepts in OMB guidance for a disciplined capital programming process. The Centers' charter includes

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<sup>15</sup>Specifically, standard design applies to specific facility types that are funded through the Military Construction, Army accounts. Standard designs do not apply to facilities constructed by USACE for other military services or components.

<sup>16</sup>In fiscal year 2019 this would amount to between \$556 million and \$708 million for projects using Army standard designs.

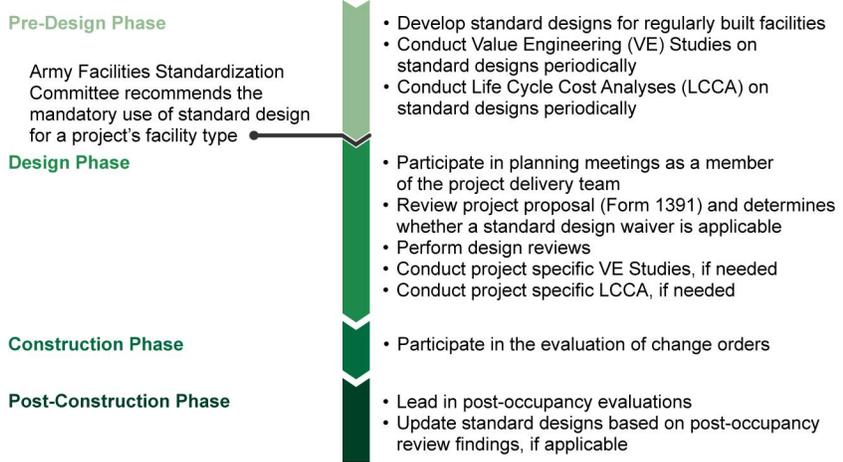
the following three objectives: (1) developing and refining Centers' policies and processes; (2) assuring consistent application of standards of the Centers program; and (3) monitoring the Centers' execution to meet the overarching objectives and priorities of the AFSP and standardization process.<sup>17</sup> To meet the three objectives, the Centers engage in different activities throughout the military construction process. Figure 4 below shows the various points at which the Centers are involved in the life-cycle of a military construction project and examples of the activities in which the Centers engage. For example, Engineer Regulation 1110-3-113 states that during the design phase of projects, the Centers maintain a lead role and will be the technical lead for coordination, review, and acceptance of design deliverables, including providing field technical assistance, identifying and advising when a waiver is required and coordinating with appropriate authorities in this matter, and reviewing and editing requests for proposal documents—activities that according to our analysis support the Centers' second objective.<sup>18</sup>

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<sup>17</sup>The AFSP objectives include (1) increased credibility with Congress through more consistent construction program development; (2) increased consistency in facility types with equal treatment among Army Commands, installations, and users; (3) improved master planning and site development activities, improved design quality, and the promotion of design excellence; (4) simplified programming activities; (5) simplified design and construction project management, reduced design costs and times, reduced construction costs and time, and reduced change orders during construction; and (6) increased customer satisfaction through improved responsiveness to user's functional and operational requirements.

<sup>18</sup>Army Engineer Regulation 1110-3-113, *Department of the Army Facilities Standardization Program* (April 21, 2016).

**Figure 4: Centers of Standardization Activities Performed during Military Construction Army Projects**



Source: GAO analysis of U.S. Army Corps of Engineers Centers of Standardization information. | GAO-20-303

Based on our review of supporting documentation from five projects that used standard designs, we found that the Centers were undertaking the activities mentioned above.<sup>19</sup> In addition, activities in which the Centers engaged during the design, construction, and post-construction phases of these projects were consistent with key principles and concepts in OMB guidance.<sup>20</sup> Specifically, we found evidence that, for these five projects, Centers' staff participated as integrated members of the project delivery teams in planning meetings, design reviews, assessments of the need for standard design waivers, value engineering studies, and life-cycle cost analyses during the projects' design and construction phases. These activities were consistent with key principles and concepts in OMB guidance for a disciplined capital planning process, including that agencies should use integrated project teams, as appropriate, to manage

<sup>19</sup>We requested and received supporting documentation for seven Army military construction projects initially authorized in fiscal years 2014 and 2015. Five of these projects utilized standard designs and the other two projects did not.

<sup>20</sup>OMB Circular No. A-11, *Preparation, Submission, and Execution of the Budget*, Supplement, *Capital Programming Guide*, Version 3.0 (December 2019). The purpose of the *Capital Programming Guide* is to provide professionals in the federal government guidance for a disciplined capital programming process, as well as techniques for planning and budgeting, acquisition, and management and disposition of capital assets. The *Capital Programming Guide* also provides agencies flexibility in how they implement the key principles and concepts discussed.

the various capital programming phases or major acquisition programs within the agency.<sup>21</sup>

In addition, we found that other Centers' activities—performing post-occupancy evaluations (POE) and updating standard designs when applicable—were also consistent with key principles and concepts in OMB guidance for a disciplined capital planning process. For instance, we found that a POE was completed for one project, a post-occupancy questionnaire was completed for another project, a POE was planned during fiscal year 2020 for a third project, and a fourth project was still under construction.<sup>22</sup> According to OMB capital programming guidance, POEs are tools to evaluate the overall effectiveness of an agency's capital acquisition process. The primary objectives of a POE include (1) identifying how accurately a project meets its objectives, expected benefits, and strategic goals of the agency and (2) ensuring the continual improvement of an agency's capital-programming process based on lessons learned. The guidance identifies factors to be considered for evaluation in conducting a POE, such as standards and compliance, customer/user satisfaction, and cost savings. The guidance also notes that a POE should generally be conducted 12 months after the project has been occupied, to allow time for the tenant to evaluate the building's performance and relevant aspects of project delivery. However, the guidance allows agencies some flexibility in the timing of a POE to meet their unique needs if 12 months is not the optimal timing to conduct the evaluation.

Our review of Centers guidance and project documents also found that the Centers' activities supported the Centers' objectives as well as AFSP objectives and priorities. In addition, Centers officials emphasized that the Centers participate in all Army standard design construction projects to ensure that the facility designs support the objectives of the AFSP, specifically improving the programming, design, and construction processes for Army facilities. As shown in table 1 and further outlined below, we

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<sup>21</sup>OMB, *Capital Programming Guide* (December 2019). Value-engineering is a federal and commercially recognized systematic process of reviewing and analyzing project requirements, among other things, for the purpose of achieving the essential functions at the lowest facility life-cycle cost consistent with required levels of performance, reliability, quality, or safety. Life-cycle cost is the total cost of a building or other product, computed over its useful life. It includes all relevant costs involved in acquiring, owning, operating, maintaining, and disposing of the facility over a specified period of time. See OMB Circular No. A-131, *Value Engineering* (Dec. 26, 2013).

<sup>22</sup>According to Centers officials, a POE is not required for the fifth project because a waiver of the requirement to use the current standard design was approved.

assessed whether the Centers’ activities undertaken on standard design construction projects were applicable to the Centers’ objectives. Then, for those that were applicable, we determined whether those activities supported the Centers’ objectives. (See appendix IV for a detailed analysis of how the Centers activities support the program’s objectives.)

**Table 1: GAO’s Assessment of the Relationship between Centers of Standardization (Centers) Activities and Applicable Objectives**

Centers of Standardization activity	Objective 1: Developing and refining Centers policies and processes? ("Y/N")	Objective 2: Assuring consistent application of Centers’ standards? ("Y/N")	Objective 3: Monitoring Centers execution to meet the overarching objectives and priorities of the Army Facilities Standardization Program (AFSP) and standardization process? ("Y/N")
Development of Army standards and Army standard designs	Y	n/a	Y
Planning meetings	Y	Y	Y
Design reviews	n/a	Y	Y
Value engineering <sup>a</sup>	n/a	Y	Y
Life cycle cost analysis <sup>b</sup>	n/a	Y	Y
Post occupancy evaluation	Y	Y	Y
Authorizing standard design waivers	Y	Y	Y

Legend: n/a: not applicable

Source: GAO analysis of Centers of Standardization information. | GAO-20-303

<sup>a</sup>Value-engineering is a systematic process of reviewing and analyzing project requirements, among other things, for the purpose of achieving the essential functions at the lowest facility life-cycle cost consistent with required levels of performance, reliability, quality, or safety.

<sup>b</sup>Life-cycle cost is the total cost of a building or other product computed over its useful life. It includes all relevant costs involved in acquiring, owning, operating, maintaining, and disposing of the facility over a specified period of time.

- **Centers use POEs to evaluate standard designs:** We found, for example, that the POEs led by the Centers are designed to evaluate whether the project met fundamental Army functional and mission requirements, whether the project implemented Army standard design, and whether improvements to the design could be made. These reviews support Centers objectives 1, 2, and 3— developing and refining Centers’ policies and processes, consistently applying Army standard designs, and supporting AFSP objectives and priorities—by identifying areas of the design needing improvement, evaluating whether a facility was constructed in accordance with the approved project design, and eliciting customer feedback concerning whether the finished facility meets mission requirements.

- **Centers review standard design waivers:** The Centers review an installation's waiver request and advise whether a waiver to Army standards or standard designs is required for that specific project. This process supports Centers objectives 1, 2, and 3—developing and refining Centers' policies and processes, consistently applying Army standard designs, and supporting AFSP objectives and priorities. Specifically, part of the waiver review and approval process is the Centers' assessing whether a waiver request represents a unique need of a specific end user or a possible permanent change to the Army standard design or Unified Facilities Criteria. In addition, if the Centers waive the use of or approve deviations from standard design prior to the beginning of the construction phase, it may reduce the number of change orders that occur during construction.

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## Army Has Limited Performance Measures to Track the Centers' Progress toward Key Objectives

The Army, through its Centers of Standardization Management Board, is responsible for oversight of the Centers and has performance measures to track their progress in achieving one of their three key objectives. However, the Army does not have performance measures for assessing progress for their other two objectives.

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## Army's Centers of Standardization Management Board Is Responsible for Oversight of the Centers

The Board provides oversight to the Centers in support of the AFSP. The Board members are responsible for developing, implementing, and reporting on program metrics. The Centers' Charter of 2006 broadly identifies the mission and objectives of the Board, while more recent program guidance and regulations describe its functions in more detail.<sup>23</sup> The Charter states that the mission of the Board is to provide corporate oversight and consistent Centers execution in support of the AFSP.

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<sup>23</sup>See Army Regulation 420-1, *Army Facilities Management* (Feb. 12, 2008) (incorporating administrative revision, dated March 6, 2019); Army Engineer Regulation 1110-3-113, *Department of the Army Facilities Standardization Program* (April 21, 2016).

In overseeing the Centers, it is key that the Board has performance measures that provide it with evaluative information to help make decisions about the program—information that tells them whether, and why, a program is working well or not. Performance measurement is the ongoing monitoring and reporting of program accomplishments, particularly progress toward pre-established goals. It is typically conducted by program or agency management and is critical for providing information concerning whether a program is working well or not.<sup>24</sup> Performance measures may address the type or level of program activities conducted (processes), the direct products and services delivered by a program (outputs), or the results of those products and services (outcomes).

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### Army's Oversight Processes for the Centers Have Limited Performance Measures for Tracking Progress toward Achieving Centers' Objectives

The Army has a performance measure to support its first key objective. Each fiscal year, the nine Centers develop budget execution plans that outline how they will support the design standards for the specific facility types for which they have responsibility. In these plans, the Centers establish goals for updating specific existing standard designs and developing new standard designs (that is, the output from the Centers' efforts). The Board's primary oversight process consists of monitoring program execution of the nine Centers. According to Center officials, the Board reviews these execution plans at the semi-annual board meetings to determine whether the Centers are executing as planned, that is have the Centers met their goals for updating and developing standard designs. We found that this oversight process enables the Board to assess the progress each of the Centers has made toward achieving its goals for updating existing standard designs and developing new ones. For example, in fiscal year 2017 the Fort Worth Center completed all four of its planned standard design updates, and the Honolulu Center completed three of its four planned updates.

We also found that the Board does not evaluate progress toward ensuring that the Centers consistently apply standard designs across the Centers

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<sup>24</sup>GAO, *Performance Measurement and Evaluation: Definitions and Relationships*, [GAO-11-646SP](#) (Washington, D.C.: May 2011). A program is defined as any activity, project, function, or policy that has an identifiable purpose or set of objectives.

of Standardization program (second objective of the Centers). Specifically, as shown in table 1 above, the Centers engage in a number of activities that support the consistent application of Centers standards on a project-by-project basis.<sup>25</sup> However, the Board does not maintain, consolidate, or analyze information about how frequently the Centers engage in such activities, or how the Centers' activities affect the program. That is because, according to Army and Centers officials, neither the Board nor the Centers have developed and implemented performance measures to assess the progress the Centers are making in ensuring that standard designs are consistently used. Absent such measures, the Army lacks assurance that standard designs are being applied, when appropriate, and that standard designs are being applied consistently across the service.

In fact, to provide the project-specific documentation that we reviewed, the Centers needed to request documents from the USACE district office responsible for the projects. According to Centers officials, this was necessary because the Centers currently do not have a document management system in which project documentation is stored. Instead, as the USACE organization responsible for specific projects, each district maintains its own project records. The officials stated that USACE recently moved to a cloud-based system for storing project documents and is exploring whether this system could provide a more central document storage system. We note that having access to such information, along with creating appropriate performance measures, could enable the Board to measure whether progress has been made in ensuring that standard designs are applied consistently.

In addition, we found that the Board does not evaluate whether the Centers are making progress in supporting the objectives and priorities of the AFSP (third objective of the Centers). One of the objectives of the AFSP is to reduce design costs and time, construction costs and time, and the number of change orders issued during construction. Although Army and Centers officials told us that the use of standard designs reduces project costs, time, and change orders, they could not provide supporting data. That is because, according to Army and Centers officials, neither the Board nor the Centers have developed and implemented performance measures to assess the effects of the use of standard designs. Creating such measures could enable the Army to

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<sup>25</sup>See appendix IV for details of the specific activities the Centers engage in and the objectives these actions support.

assess the extent to which the Centers are reducing design costs and time, construction costs and time, and the number of change orders issued.

*DOD's Fiscal Year 2020 Annual Performance Plan and Fiscal Year 2018 Annual Performance Report* established a goal of simplifying, delivering faster, and reducing costs of product and service procurement. One of the performance measures associated with this goal was to reduce cost overruns and schedule delays by up to 50 percent for military construction projects. Developing and implementing performance measures related to reducing design costs and time, construction costs and time, and the number of change orders issued would enable the Centers to demonstrate the extent to which they are supporting DOD's annual performance goals.

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## Use of Standard Design Does Not Introduce Increased Liability to Facility Projects

We found that the use of the standard design does not introduce increased liability for the Centers if issues arise during a construction project. Centers officials stated that a contractor could file a claim against the government if the contractor felt there was a flaw in the Army's standard design or that using the standard design resulted in unanticipated costs during the design or construction phase. However, Centers officials stated that there have been no instances in which any of the Centers was a party to legal action related to the use of a standard design.

According to Centers officials, the design for a facility project is typically developed by one of the USACE district offices or an architect-engineer contractor. Further, these officials stated that while the pertinent Army standard design guides the development of Army project designs, the final project design, certified by the USACE district office or an architecture/engineering contractor, represents the plan for a specific project. In addition, according to the Federal Acquisition Regulation (FAR), the architect-engineer contractor is responsible for the professional quality, technical accuracy, and coordination of all designs, drawings, specifications, and other services furnished by the contractor

under its contract.<sup>26</sup> Furthermore, the FAR states that the contractor shall, without additional compensation, correct or revise any errors or deficiencies in its designs, drawings, specifications, and other services.<sup>27</sup> The FAR also stipulates that the contractor may be liable for government costs resulting from errors or deficiencies in designs furnished under the contract.<sup>28</sup> Consequently, according to USACE officials, because the Centers are not responsible for the design of a specific project, they would not have increased liability in the event that changes were required during construction.

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## Conclusion

The Centers of Standardization develop and update Army standards and Army standard designs within the Army Facilities Standardization Program. In addition, the Centers are responsible for ensuring that the design and construction of Army military construction projects comply with approved Army standards and Unified Facilities Criteria. While the Army tracks the Centers' program execution related to the Centers' efforts to develop new and update existing standard designs (first objective of the Centers), it does not have performance measures for assessing progress toward the Centers' other two objectives. Specifically, the Army does not have performance measures in place to assess the progress the Centers have made toward assuring consistent application of standards from the Centers' program (second objective of the Centers) or monitoring the Centers' execution to meet the overarching objectives and priorities of the AFSP and standardization process (third objective of the Centers) including, among other things, reducing design costs and time, construction costs and time, and change orders during construction. This hinders the Centers' ability to determine how well they are supporting the objectives of both the Army Facility Standardization Program and DOD's annual performance plans, as well as the Centers' ability to demonstrate the extent to which they are achieving their objectives.

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<sup>26</sup>Federal Acquisition Regulation (FAR), 48 C.F.R. § 52.236-23 (2020). *See also* FAR, 48 C.F.R. § 52.236-25 (2020) ("Requirements for Registration of Designers").

<sup>27</sup>Federal Acquisition Regulation (FAR), 48 C.F.R. § 52.236-23 (2020).

<sup>28</sup>FAR, 48 C.F.R. § 36.608 (2020). *See also* FAR, 48 C.F.R. § 36.609-2 (2020) ("Redesign Responsibility for Design Errors or Deficiencies"); FAR, 48 C.F.R. § 36.609-4 (2020) ("Requirements for the Registration of Designers")

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## Recommendations for Executive Action

We are making two recommendations to the Secretary of the Army.

The Secretary of the Army should ensure that the Assistant Chief of Staff for Installation Management, in conjunction with the Centers of Standardization and the U.S. Army Corps of Engineers, establish and implement performance measures to assess the progress the Centers are making in ensuring that standard designs are used consistently.

(Recommendation 1)

The Secretary of the Army should ensure that the Assistant Chief of Staff for Installation Management, in conjunction with the Centers of Standardization and the U.S. Army Corps of Engineers, establish and implement performance measures to assess the effects of the use of standard designs, specifically the progress the Centers are making in reducing design costs and time, construction costs and time, and change orders. (Recommendation 2)

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## Agency Comments and Our Evaluation

We provided a draft of this report to the Department of the Army for review and comment. In its written comments, the Army concurred with both of our recommendations, and stated it would take actions to implement them. The Army's comments are printed in their entirety in appendix V.

We are sending copies of this report to the appropriate congressional committees; the Secretary of Defense and the Secretaries of the Army, Navy, and Air Force.

In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions concerning this report, please contact Diana Maurer at (202) 512-9627 or [maurerd@gao.gov](mailto:maurerd@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix VI.



Diana Maurer  
Director, Defense Capabilities  
and Management

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*List of Committees*

The Honorable James M. Inhofe  
Chairman  
The Honorable Jack Reed  
Ranking Member  
Committee on Armed Services  
United States Senate

The Honorable John Boozman  
Chairman  
The Honorable Brian Schatz  
Ranking Member  
Subcommittee on Military Construction,  
Veterans Affairs, and Related Agencies  
Committee on Appropriations  
United States Senate

The Honorable Adam Smith  
Chairman  
The Honorable Mac Thornberry  
Ranking Member  
Committee on Armed Services  
House of Representatives

The Honorable Debbie Wasserman Schultz  
Chairwoman  
The Honorable John R. Carter  
Ranking Member  
Subcommittee on Military Construction,  
Veterans Affairs, and Related Agencies  
Committee on Appropriations  
House of Representatives

# Appendix I: List of Projects GAO Reviewed

**Table 2: List of Standard Design Construction Projects Reviewed**

<b>Project description</b>	<b>Project number</b>	<b>Location</b>	<b>Responsible Center of Standardization</b>	<b>Year authorized</b>	<b>Year completed</b>
Unmanned aerial vehicle hanger	081372	Fort Irwin, California	Mobile	2015	Ongoing
Battlefield weather support facility	078778	Fort Campbell, Kentucky	Savannah	2014	2018
Tactical equipment maintenance facility	076777	Joint Base Lewis-McChord, Washington	Savannah	2014	2019
Advanced infantry training barracks complex	053584	Joint Base Langley-Eustis, Virginia	Fort Worth	2014	2019
Advanced infantry training barracks complex	051868	Fort Gordon, Georgia	Fort Worth	2014	2019

Source: Centers of Standardization information | GAO-20-303

# Appendix II: Facility Types Supported by Centers of Standardization

According to Centers officials, a total of 12 full-time and 21 part-time staff are assigned to the Centers of Standardization. Each Center specializes in and is responsible for specific facility types and their designs. Table 3 below lists the current staffing levels and the facility types supported by each of the Centers.

**Table 3: Staffing Levels and Facility Types Supported by Centers of Standardization**

Centers of standardization (location, staff, scope)	Seventy facility types supported by standard design
Fort Worth, Texas • 2 full-time, 2 part-time • 10 facility types, including 1 under development	1. Advanced individual training complex 2. Basic training and one station unit complex 3. Central issue facility 4. General purpose warehouse 5. Reception barracks 6. Starship renovation <sup>a</sup> 7. Unaccompanied enlisted personnel housing 8. Unit supply support facility 9. Warriors in transition complex 10. Advanced survivable test battery (under development)
Honolulu, Hawaii • 0 full-time, 2 part-time • 2 facility types	11. Senior leaders quarters 12. Transient officer's quarters

**Appendix II: Facility Types Supported by  
Centers of Standardization**

<b>Centers of standardization (location, staff, scope)</b>	<b>Seventy facility types supported by standard design</b>
Huntsville, Alabama <ul style="list-style-type: none"> <li>• 2 full-time, 2 part-time</li> <li>• 17 facility types</li> </ul>	13. Army community service center 14. Automated record fire range 15. Basic 10M-25M firing range 16. Battle command training center 17. Child development center 18. Combat pistol – MP firearms qualification course 19. Directorate of emergency services facility 20. Fire station 21. Live fire exercise shoothouse 22. Modified record fire range 23. Outdoor sports facilities 24. Physical fitness facility 25. School age center 26. Solder family service center 27. Training support center 28. Urban assault course 29. Youth center
Louisville, Kentucky <ul style="list-style-type: none"> <li>• 0 full-time, 3 part-time</li> <li>• 2 facility types</li> </ul>	30. Judicial center with courtroom 31. Operational readiness training complex
Mobile, Alabama <ul style="list-style-type: none"> <li>• 2 full-time, 3 part-time</li> <li>• 4 facility types</li> </ul>	32. Attack/reconnaissance/assault battalion hanger 33. Aviation support battalion hanger 34. General support aviation battalion hanger 35. Unmanned aircraft systems hanger
Norfolk, Virginia <ul style="list-style-type: none"> <li>• 1 full-time, 2 part-time</li> <li>• 8 facility types</li> </ul>	36. Army family housing 37. Automated-aided instruction 38. Criminal investigation command 39. General instruction building 40. Information systems facility 41. Military entrance processing station 42. Non-commissioned officer academy 43. Permanent party enlisted dining facility
Omaha, Nebraska <ul style="list-style-type: none"> <li>• 1 full-time, 2 part-time</li> <li>• 5 facility types</li> </ul>	44. Access control points 45. Chapels 46. Family life center 47. Initial entry training chapels 48. Religious education facilities

**Appendix II: Facility Types Supported by  
Centers of Standardization**

<b>Centers of standardization (location, staff, scope)</b>	<b>Seventy facility types supported by standard design</b>
Savannah, Georgia <ul style="list-style-type: none"> <li>• 2 full-time, 3 part-time</li> <li>• 5 facility types</li> </ul>	49. Battlefield weather support facility 50. Brigade/battalion headquarters 51. Company operations facility 52. Echelons above brigade command & control facility 53. Tactical equipment maintenance facility
Winchester, Virginia <ul style="list-style-type: none"> <li>• Center for nonpermanent facilities</li> <li>• 2 full-time, 2 part-time</li> <li>• 17 facility types</li> </ul>	54. Envelopes <sup>b</sup> 55. Administration 56. Billeting 57. Brief/assembly classroom 58. Dining 59. Fire station 60. Force protection 61. Headquarters 62. Joint operation center 63. Latrine 64. Laundry 65. Medical 66. Morale, welfare, and recreation-fitness 67. Officer quarters 68. Religious 69. Tactical operation center 70. Weapon storage

Source: Centers of Standardization information | GAO-20-303

<sup>a</sup>The Starship facilities are similar in function to the Basic Combat Training complexes and house 1,200 soldiers. A Starship includes barrack accommodations, latrines, classrooms and a detached dining facility.

<sup>b</sup>Envelopes represent seven temporary facility types that can be adapted to meet the specific needs of the user.

# Appendix III: Department of Defense Standardization Program

The Department of Defense's (DOD) department-wide standardization program has the goals of improving military operational readiness, reducing total ownership costs, and reducing cycle time. Overseen by the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)), the Department of Defense Standardization Program is described in DOD Manual 4120.24, which outlines its governing council, definitions, and procedures that apply to all components within the department.<sup>1</sup>

Under the Defense Standardization Program, DOD component heads ensure that materiel standardization, including information technology and facilities, is addressed throughout the acquisition process. The three overarching goals of the Defense Standardization Program are to (1) improve military operational readiness, (2) reduce total ownership costs of the department, and (3) reduce cycle times. The manual also defines the following terms:

- **Standard.** A document that establishes uniform engineering or technical criteria, methods, processes, and practices.
- **Standardization.** The process of developing and agreeing on (by consensus or decision) uniform engineering criteria for products, processes, practices, and methods for achieving compatibility, interoperability, interchangeability, or commonality of materiel.
- **Defense standard.** A document that establishes uniform engineering and technical requirements for military-unique or substantially modified commercial processes, procedures, practices, and methods. There are five types of defense standards: interface standards, design criteria standards, manufacturing process standards, standard practices, and test method standards.

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<sup>1</sup>DOD Manual 4120.24, *Defense Standardization Program (DSP) Procedures* (Sept. 24, 2014) (incorporating change 2, effective Oct. 15, 2018).

DOD's Unified Facilities Criteria (Facilities Criteria) and Unified Facilities Guide Specifications (UFGS) provide facility planning, design, construction, operation and maintenance, sustainment, restoration, and modernization criteria for facility owned by the DOD. The Facilities Criteria contain technical guidance; introduce new and innovative technology; or provide mandatory requirements to implement laws, regulations, executive orders, and policies prescribed by higher authority documents. The Facilities Criteria also define performance and quality requirements for facilities to support their mission throughout their life cycle. According to DOD guidance, the Facilities Criteria provide the most current operationally effective, cost-efficient, and safe criteria at the time of publication.<sup>2</sup> Both the Facilities Criteria and UFGS are developed through the joint efforts of the U.S. Army Corps of Engineers, the Naval Facilities Engineering Command, and the Air Force Civil Engineer Center, and are approved by the Engineer Senior Executive Panel of the Unified Facilities Criteria Program.

The Facilities Criteria and UFGS systems were designed not only to establish uniformity among defense facilities, but to standardize and streamline the process for developing, maintaining, and disseminating construction criteria. The procedures for the development and maintenance of the Unified Criteria and Unified Specifications are outlined in Military Standard 3007G, which is updated by the Engineering Senior Executive Panel.<sup>3</sup>

Each military department (Army, Navy, and Air Force) has its own facilities standardization program that implements the Unified Criteria and Unified Specifications as well as service-specific facilities criteria, standards, and guides. The Army's program, known as the Army Facilities Standardization Program (AFSP), is the oldest among the three departments, having been initiated in 1993. Due largely to the unique construction needs of the Army, the AFSP is the most complex and

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<sup>2</sup>DOD Military Standard 3007G, *Department of Defense Standard Practice Unified Facilities Criteria, Facilities Criteria and Unified Facilities Guide Specifications* (Nov. 1, 2019).

<sup>3</sup>DOD Military Standard 3007G, *Department of Defense Standard Practice Unified Facilities Criteria, Facilities Criteria and Unified Facilities Guide Specifications* (Nov. 1, 2019). Members of the Engineering Senior Executive Panel include: the Deputy Under Secretary of Defense for Facility Management; the Chief of Engineering and Construction of the Army Corps of Engineers; the Chief Engineer of the Naval Facilities Engineering Command; and the Deputy Director of Civil Engineers, Deputy Chief of Staff for Logistics, Engineering and Force Protection, Headquarters, U.S. Air Force.

comprehensive of the facility standardization programs.<sup>4</sup> It utilizes two levels of guidance for standardized facility types: a broad standard, called “Army Standards,” and a specific standard, called “Standard Design.” The Department of the Navy program began in 2014 and provides policy and standards for the design development, and revision of Navy project documents in *Navy and Marine Corps Design and Facilities Criteria*, while the Air Force program was started in 2016 and provides criteria in an Air Force Instruction for design and construction of Air Force facilities.<sup>5</sup>

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<sup>4</sup>Specifically, while the Army has standard designs for 70 facility types, the Navy and Air Force programs have standard designs for nine and 23 facility types, respectively. In addition, while the Navy program has a standard format, it does not contain the same level of specific design information that is contained in the Army standard designs. Similarly, the Air Force program provides basic floor plans for the 23 facility types for which it has a standard design. While these designs do include the various functional modules needed for the facility, the level of detail included in the design does not provide the same level of detail as the Army’s standard.

<sup>5</sup>Navy Facilities Criteria 1-300-09N, *Navy and Marine Corps Design Procedures* (May 1, 2014) (incorporating change 4, effective June 14, 2018); Air Force Instruction 32-1023, *Designing and Constructing Military Construction Projects* (Nov. 19, 2015).

# Appendix IV: Crosswalk of Key Centers of Standardization Activities and Objectives

The Centers of Standardization (Centers) undertake a number of activities designed to support the key objectives found in their charter, which includes supporting the objectives of the Army Facilities Standardization Program (AFSP). Table 4 identifies each of these activities along with the specific objectives that we determined the activities support.

- Centers objectives:
- developing and refining Centers of Standardization policies and processes,
- assuring consistent application of standards of the Centers' program, and
- monitoring the Centers' execution to meet the overarching objectives of the AFSP and standardization process.
- AFSP Objectives:
- increased credibility with the Congress through more consistent construction program development,
- increased consistency in facility types with equal treatment among Army Commands, installations, and users,
- improved master planning and site development activities, improved design quality, and the promotion of design excellence,
- simplified programming activities,
- simplified design and construction project management, reduced design costs and times, reduced construction costs and time, and reduced change orders during construction, and
- increased customer satisfaction through improved responsiveness to users' functional and operational requirements.

**Appendix IV: Crosswalk of Key Centers of Standardization Activities and Objectives**

**Table 4: GAO’s Assessment of the Relationship between Centers of Standardization Activities and Objectives**

<b>Activity</b>	<b>Center of Standardization (Centers) objectives being supported</b>
<p><b>Developing Army standards and Army standard designs</b> – Under the Army Facilities Standardization Program (AFSP), the Centers are responsible for developing and updating both Army standards and Army standard designs. Both of these must also comply with Unified Facilities Criteria established by DOD.</p>	<p><b>Centers objective 1: Developing and Refining Policies and Processes</b> – The Army standards and Army standard designs are the basis for designing facilities; consequently, Centers’ activity that develops and refines either Army standards or Army standard designs supports this objective.</p> <p><b>Centers objective 3: Supporting AFSP Objectives and Priorities</b> – Supports three of the Army facilities standardization objectives. (1) Supports the objective of increased consistency in facility types by developing new Army standards and Army standard designs and updating these designs as needed based on user input and changes in operating requirements. (2) Supports the objective of improved master planning and site development activities, improved design quality, and the promotion of design excellence by providing approved standards for use on certain facility types. (3) Supports the reduction of design costs and times by providing the basic designs for facility types, which is likely to reduce design costs and times.</p>
<p><b>Centers participation in planning meetings</b> – Personnel share information and document site development work that the USACE Geographic District is required to perform in preparation for integrating the standard design into the site, coordinating utilities, and combining site and facility Leadership in Energy and Environmental Design strategy, among other things.</p>	<p><b>Centers objective 1: Developing and Refining Policies and Processes</b> – Participating in the planning process enables the Centers to identify updates needed in the standard design to satisfy emerging requirements.</p> <p><b>Centers objective 2: Consistently Applying Standard Design</b> – Participating in the planning process for the construction project enables the Centers to ensure that standard design is considered and incorporated appropriately.</p> <p><b>Centers objective 3: Supporting AFSP Objectives and Priorities</b> – Supports three of the Army facilities standardization objectives. (1) Supports the objective of increased consistency in facility types in that the Centers, which are responsible for creating, updating, and ensuring the use of standard designs, participate in the planning process for current construction projects that incorporate standard designs. (2) Supports the objective to improve master planning and site development activities, improved design quality, and the promotion of design excellence in that the Centers participate in the site development activities and work with the end users to incorporate unique requirements into the design. (3) Supports the objective to increase customer satisfaction by incorporating unique user requirements into the design process as appropriate.</p>
<p><b>Conducting design reviews</b> – At various times during the design process, the Centers review the design to determine if it complies with the standard design requirements. The Centers reviewer provides detailed written comments about the design, to which the designer of responsibility responds and resolves prior to design approval.</p>	<p><b>Centers objective 2: Consistently Applying Standard Design</b> – The Centers’ participation in the review of proposed design ensures that standard design is considered for the construction project and results in an approved design that incorporates the standard design.</p> <p><b>Centers objective 3: Supporting AFSP Objectives and Priorities</b> – Supports three of the Army facilities standardization objectives. (1) Supports the objective of increased consistency in facility types in that the Centers, which are responsible for creating, updating, and ensuring the use of standard designs, review the proposed designs for construction projects and incorporate standard designs into the design process for current projects. (2) Supports the objective to improve master planning and site development activities, improved design quality, and the promotion of design excellence in that the Centers participate in the site development activities and work with the end users to incorporate unique requirements into the design. (3) Supports the objective to increase customer satisfaction by incorporating unique user requirements into the design process as appropriate.</p>

**Appendix IV: Crosswalk of Key Centers of Standardization Activities and Objectives**

<b>Activity</b>	<b>Center of Standardization (Centers) objectives being supported</b>
<p><b>Conducting value engineering studies –</b> Centers personnel study the functions a project is supposed to achieve and identify alternative ways to achieve the equivalent function while increasing the value and the benefit ratio of the project.</p>	<p><b>Centers objective 2: Consistently Applying Standard Design –</b> Supports this objective in that the studies ensure that standard design is utilized unless a more cost-effective or a more functional alternative would better serve the end user of the project.</p> <p><b>Centers objective 3: Supporting AFSP Objectives and Priorities –</b> Supports four of the Army facilities standardization objectives. (1) Supports the objective of increased consistency in facility types in that the studies identify the instances in which standard design can be altered. (2) Supports the objective to improve master planning and site development activities, improved design quality, and the promotion of design excellence in that the studies identify project specific exceptions to standard design. (3) Supports the reduction of construction costs through incorporation of acceptable design changes that provide greater value and/or benefits and the reduced change orders by incorporating changes upfront rather than during the construction process. (4) Supports the objective to increase customer satisfaction in that the studies incorporate alternative design options that will satisfy the functional requirements of the project that provide greater value and/or benefits to the user.</p>
<p><b>Conducting life-cycle cost analyses –</b> Life-cycle cost analyses explore the feasibility of alternative approaches for meeting the user needs for a specific project.</p>	<p><b>Centers objective 1: Developing and Refining Policies and Processes – Supports</b> this objective in that the Centers participate in the planning process, which enables them to identify updates needed in the standard design to satisfy emerging requirements.</p> <p><b>Centers objective 2: Consistently Applying Standard Design –</b> Supports this objective in that the Centers consider standard design in the planning process for the construction project, which ensures that standard design is considered and incorporated appropriately.</p> <p><b>Centers objective 3: Supporting AFSP Objectives and Priorities –</b> Supports three of the Army facilities standardization objectives. (1) Supports the objective of increased consistency in facility types in that the Centers, which are responsible for creating, updating, and ensuring the use of standard designs, participate in the planning process for construction projects by incorporating standard designs into the planning process for current projects. (2) Supports the objective to improve master planning and site development activities, improved design quality, and the promotion of design excellence in that the Centers participate in site development activities and work with the end users to incorporate unique requirements into the design. (3) Supports the objective to increase customer satisfaction in that the analyses incorporate unique user requirements into the design process as appropriate.</p>
<p><b>Centers participation in post occupancy reviews –</b> Post-occupancy reviews evaluate whether a facility meets the Army standard design. Center personnel identify and evaluate discrepancies to determine their cause and whether revisions to the standards are needed.</p>	<p><b>Centers objective 1: Developing and Refining Policies and Processes –</b> Supports this objective in that the Centers identify instances in which standard design needs to be updated or revised.</p> <p><b>Centers objective 2: Consistently Applying Standard Design –</b> Supports this objective in that the Centers identify and advise when waivers are required to ensure that there is sufficient justification when facilities do not use standard designs.</p> <p><b>Centers objective 3: Supporting AFSP Objectives and Priorities –</b> Supports two of the Army facilities standardization objectives. (1) Supports the objective to improve master planning and site development activities, improve design quality, and promote design excellence in that the Centers review recommended changes for inclusion in updates to the standards. (2) Supports the objective to increase customer satisfaction through improved responsiveness to users' functional and operational requirements in that the Centers consider recommended changes based on user needs for inclusion in the updates to the standards.</p>

**Appendix IV: Crosswalk of Key Centers of Standardization Activities and Objectives**

<b>Activity</b>	<b>Center of Standardization (Centers) objectives being supported</b>
<p><b>Centers approval of standard design waivers</b> – Reviews and grants waivers for deviations from Army standards or Army standard designs. The Centers review specific projects and advise installations on requests for waivers, which the Army Facilities Standardization Committee approves or disapproves. The Centers also review and approve/disapprove requests for waivers from Army standard designs.</p>	<p><b>Centers objective 1: Developing and Refining Policies and Processes</b> – Supports this objective in that the Centers consider requests for waivers and consider whether approved waivers should be incorporated into the standards.</p> <p><b>Centers objective 2: Consistently Applying Standard Design</b> – Supports this objective in that the Centers, by identifying and advising when waivers are required, ensure that there is sufficient justification when facilities do not use standard designs.</p> <p><b>Centers objective 3: Supporting AFSP Objectives and Priorities</b> – Supports four of the Army facilities standardization objectives. (1) Supports the objective to increase consistency in facility types in that the Centers grant waivers only when properly justified and consider whether waivers should be incorporated into the standards. (2) Supports the objective to improve master planning and site development activities, improve design quality, and promote design excellence in that the Centers consider whether approved changes to one project are appropriate for future projects. (3) Supports the objective to reduce change orders during construction in that approving waivers enables the Centers to include changes in design prior to the beginning of the construction phase. (4) Supports the objective to increase customer satisfaction in that the Centers’ review of waivers provides a formal process for users’ to request changes to the standard designs.</p>

Source: GAO analysis of Department of Defense information | GAO-20-303

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# Appendix V: Comments from the Department of the Army

Appendix V: Comments from the Department  
of the Army



**DEPARTMENT OF THE ARMY**  
**ASSISTANT SECRETARY OF THE ARMY**  
**INSTALLATIONS, ENERGY AND ENVIRONMENT**  
**110 ARMY PENTAGON**  
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SAIE-ZA

MAR 31 2020

Ms. Diana Maurer  
Director, Defense Capabilities Management  
U.S. Government Accountability Office  
441 G Street, NW  
Washington DC 20548

Dear Ms. Maurer,

Enclosed is the Department of Defense (DoD) response to the GAO Draft Report GAO-20-303, "GAO DRAFT Report GAO-20-303, DEFENSE INFRASTRUCTURE: Army Should Assess Progress in Standardizing Designs for Facility Construction, Dated April 2020 (GAO Code 103240)."

Also enclosed is the Department of the Army response to the subject report. My point of contact is Ms. Jacquelyn M. Anthony who can be reached at (703) 695-5705 or [jacquelyn.m.anthony.civ@mail](mailto:jacquelyn.m.anthony.civ@mail).

Sincerely,

*Alex A. Beehler*  
Alex A. Beehler

Enclosure

Appendix V: Comments from the Department  
of the Army



DEPARTMENT OF THE ARMY  
ASSISTANT SECRETARY OF THE ARMY  
INSTALLATIONS, ENERGY AND ENVIRONMENT  
110 ARMY PENTAGON  
WASHINGTON DC 20310-0110

MAR 19 2020

SAIE-ZA

MEMORANDUM FOR Secretary of the Army

SUBJECT: Request for approval to release Army Comments to GAO DRAFT Report GAO-20-303, DEFENSE INFRASTRUCTURE: Army Should Assess Progress in Standardizing Designs for Facility Construction, Dated April 2020 (GAO Code 103240)

I recommended the following responses to the draft GAO report:

a. GAO Recommendation 1: "The Secretary of Army should ensure that the Assistant Chief of Staff for Installation Management, in conjunction with the Centers of Standardization and the U.S. Army Corps of Engineers, establish and implement performance measures to assess the progress the Centers are making in ensuring that standard designs are used consistently."

Army Recommended Response: Concur with comment. This recommendation will be implemented by the Deputy Chief of Staff, G9.

b. GAO Recommendation 2: The Secretary of the Army should ensure that the Assistant Chief of Staff for Installation Management, in conjunction with the Centers of Standardization and the U.S. Army Corps of Engineers, establish and implement performance measures to assess the effects of the use of standard designs, specifically the progress the Centers are making in reducing design costs and time, construction costs and time and change orders."

Army Recommended Response: Concur with comment. This recommendation will be implemented by the U.S. Army Corps of Engineers.

Sincerely,

A handwritten signature in cursive script that reads "Alex A. Beehler".

Alex A. Beehler

Enclosure

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# Appendix VI: GAO Contact and Staff Acknowledgments

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## GAO Contact

Diana Maurer at (202) 512-9627 or [maurerd@gao.gov](mailto:maurerd@gao.gov)

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## Staff Acknowledgments

In addition to the contact named above, Brian Lepore, Director (Retired); Maria Storts, Assistant Director; John Wren, Analyst-in-Charge; Marybeth Acac, Virginia Chanley, Christopher Gezon, David Jones, Lashai McCullough, Carol Petersen, Steve Pruitt, Carter Stevens, and Cheryl Weissman made significant contributions to this report

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# Appendix VII: Accessible Data

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## Agency Comment Letter

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Accessible Text for Appendix V Comments from the Department of the Army

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SAIE-ZA

MAR 31 2020

Ms. Diana Maurer

Director, Defense Capabilities Management

U.S. Government Accountability Office

441 G Street, NW

Washington DC 20548

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Enclosure

Page 2

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Sincerely,

Alex A. Beehler

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**Appendix VII: Accessible Data**

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Enclosure

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